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Sent: Monday, November 22, 2010 9:03 PM
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Subject: Comments regarding DWR's 4th Option Hybrid Models

Thank you for the tremendous work that has gone into the hybrid models. Please find the attached comments regarding the Hybrid models, these comments are related to density and climatic differences. I look forward to your feedback.

I hope you all have a wonderful Thanksgiving.

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Near the end of Friday's conference call, two issues were discussed, which I would like to comment on: whether population density is adequately addressed and whether the ET Adjustment was the right way to compensate for differences in ETo and precipitation.

Recommendation: because density is already adjusted for in the Hybrid models, additional adjustments are not warranted. From the beginning of this process I had thought there was general agreement the issue of housing density is addressed when we allocate so much water on a per person basis for indoor use. That is, if two water agencies are the same in every way but one has a greater population than the other (increased density), then both Hybrid methods allocate more to the agency of greater density. Other types of water usage are left unchanged and unaffected.

The agency with the lower density is essentially allocated more water through that portion of the Hybrid models that address landscape water needs.

Because the Hybrid models allocated indoor water on a per person basis, for there to be another "density adjustment" we need to define what density means and show proof that density effects indoor water usage.

This is a zero-sum game: if more water is allocated to some agencies for indoor use, other agencies must necessarily be allocated less.

I believe it is too late in the U4 process for us to begin a discussion of what exactly is density and investigating whether density affects indoor water use in a meaningful way, controlling for factors such as income.

Additionally, trying to incorporate a density factor in the Option 4 model would add an additional layer of complication.

Recommendation: because climatic differences affect the outcome of the Hybrid models in two different ways, double-counting climatic differences, one of those ways (the ETo Adjustment Factors) should be eliminated

We have considered at least two ways to adjust for climatic differences: first: adjust how much water agencies get per acre of landscape, based on their ETo and amount of precipitation – as in Option 2. Another way would be to estimate how much water each agency uses for landscape and assume this level of landscape irrigation is reflective of things like acreage, ETo and precipitation. Using the latter method, the logical 20 x 2020 choice would be to require all agencies to reduce landscape irrigation proportionately.

The problem with the Hybrid models is they adjust for both these things. And by doing so they make these 20 x 2020 Options unnecessarily complicated and unjustifiably disadvantage certain water agencies.

The hybrid models roughly estimate how much water an agency has used for landscape irrigation in the past (after deducting for indoor usage and CII). So all else being equal, agencies that have a lot of acreage, high ETo and low precipitation should have a lot of water in this bucket; agencies with low acreage, low ETo and high precipitation should have very little water in this bucket. So requiring both kinds of agencies to reduce proportionately seems reasonable.

But the Hybrid models then make an additional adjustment, or allocation, to agencies with high ETo, from agencies with low ETo.

In order to justify the ETo Adjustment, DWR needs to show why the initial estimate of outdoor irrigation is not a good proxy for landscape irrigation needs (acreage, ETo and precipitation) and how this initial estimation systematically disadvantages agencies with high ETo while systematically providing an advantage to agencies with low ETo.

Absent this justification, the ETo Adjustment double-counts the impacts of climate and unnecessarily complicates these Option 4 compliance models.